Center Innovation Fund: ARC CIF

Development of a Lightweight Mobility System for a Passive Tensegrity Lander

Completed Technology Project (2017 - 2018)

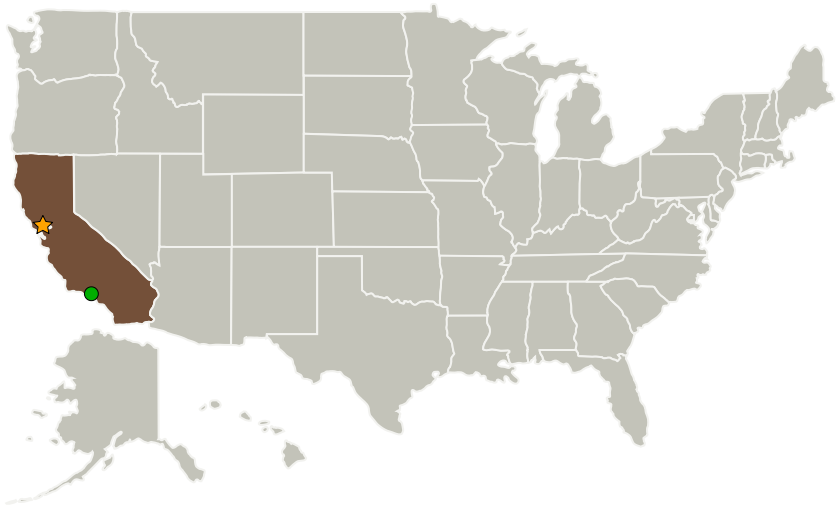
Project Introduction

We will provide actuation for JPL's light-weight and robust passive tensegrity lander, and develop simplified actuation based on either traction motors or payload-based actuation for JPL lander. We will develop minimal actuation topology and control using NTRT (NASA Tensegrity Robotics Toolkit), and evaluate how each actuation pattern performs based on the pattern's weight, size, control complexity, and achievable positioning from random initial orientations. We would then propose further development and funding through either the NASA Innovative Advanced Concepts program (NIAC), or by incorporating into a multi-year Game Changing Development (GCD) program that we hope to start up in FY18.

Anticipated Benefits

Design will allow light-weight, low-cost and robust tensegrity robots to be considered for future NASA missions

Primary U.S. Work Locations and Key Partners



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Organizations Performing Work	Role	Type	Location
Ames Research Center(ARC)	Lead Organization	NASA Center	Moffett Field, California
Jet Propulsion Laboratory(JPL)	Supporting Organization	NASA Center	Pasadena, California

Primary U.S. Work Locations
California

Project Transitions

October 2017: Project Start

September 2018: Closed out

Closeout Summary: Successfully developed tensegrity robot with collapsable s truts.

Project Website:

https://www.nasa.gov/directorates/spacetech/innovation_fund/index.html#.VQ

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Ames Research Center (ARC)

Responsible Program:

Center Innovation Fund: ARC CIF

Project Management

Program Director:

Michael R Lapointe

Program Manager:

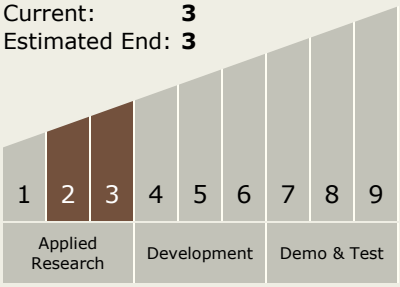
Harry Partridge

Principal Investigator:

Adrian K Agogino

Technology Maturity (TRL)

Start: **2**
Current: **3**
Estimated End: **3**



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Technology Areas

Primary:

- TX06 Human Health, Life Support, and Habitation Systems
  - TX06.2 Extravehicular Activity Systems
    - TX06.2.3 Informatics and Decision Support Systems

Target Destinations

Earth, Mars, Others Inside the Solar System